

## PATENT COOPERATION TREATY

## PCT

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter I of the Patent Cooperation Treaty)

(PCT Rule 44bis)

Applicant's or agent's file reference 990029.00003	<b>FOR FURTHER ACTION</b> See item 4 below	
International application No. PCT/US2004/035796	International filing date ( <i>day/month/year</i> ) 28 October 2004 (28.10.2004)	Priority date ( <i>day/month/year</i> ) 31 October 2003 (31.10.2003)
International Patent Classification (8th edition unless older edition indicated) See relevant information in Form PCT/ISA/237		
Applicant GKN SINTER METALS, INC.		

1. This international preliminary report on patentability (Chapter I) is issued by the International Bureau on behalf of the International Searching Authority under Rule 44 bis.1(a).
2. This REPORT consists of a total of 4 sheets, including this cover sheet.  
  
In the attached sheets, any reference to the written opinion of the International Searching Authority should be read as a reference to the international preliminary report on patentability (Chapter I) instead.

3. This report contains indications relating to the following items:

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Box No. I | Basis of the report   |
| <input type="checkbox"/> Box No. II           | Priority  |
| <input type="checkbox"/> Box No. III          | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability  |
| <input type="checkbox"/> Box No. IV           | Lack of unity of invention  |
| <input checked="" type="checkbox"/> Box No. V | Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement |
| <input type="checkbox"/> Box No. VI           | Certain documents cited   |
| <input type="checkbox"/> Box No. VII          | Certain defects in the international application  |
| <input type="checkbox"/> Box No. VIII         | Certain observations on the international application   |

4. The International Bureau will communicate this report to designated Offices in accordance with Rules 44bis.3(c) and 93bis.1 but not, except where the applicant makes an express request under Article 23(2), before the expiration of 30 months from the priority date (Rule 44bis .2).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No. +41 22 740 14 35	Date of issuance of this report 01 May 2006 (01.05.2006)
	Authorized officer  Philippe Becamel  Telephone No. +41 22 338 70 90

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL SEARCHING AUTHORITY

To:  
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**PCT**

REC'D 08 JUL 2005

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## WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Applicant's or agent's file reference 990029.00003		Date of mailing (day/month/year) <b>06 JUL 2005</b> <b>FOR FURTHER ACTION</b> See paragraph 2 below
International application No. PCT/US04/35796	International filing date (day/month/year) 28 October 2004 (28.10.2004)	Priority date (day/month/year) 31 October 2003 (31.10.2003)
International Patent Classification (IPC) or both national classification and IPC IPC(7): F16L 15/06 and US Cl.: 52/223.13, 52/223.14; 403/87, 403/343		
Applicant GKN SINTER METALS, INC.		

**1. This opinion contains indications relating to the following items:**

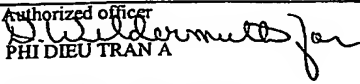
- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

**2. FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.  
For further options, see Form PCT/ISA/220.

**3. For further details, see notes to Form PCT/ISA/220.**

Name and mailing address of the ISA/ US Mail Stop PCT, Attn: ISA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer  PHI DIEU TRAN A Telephone No. 703-872-9325
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WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.

PCT/US04/35796

Box No. I Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☐ This opinion has been established on the basis of a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing  
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format  
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in international application as filed.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

WRITTEN OPINION OF THE  
INTERNATIONAL SEARCHING AUTHORITY

International application No.  
PCT/US04/35796

Box No. V Reasoned statement under Rule 43 *bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)

Claims NONE YES  
Claims 1-8 NO

Inventive step (IS)

Claims NONE YES  
Claims 1-8 NO

Industrial applicability (IA)

Claims 1-8 YES  
Claims NONE NO

2. Citations and explanations:

Claims 1-8 lack novelty under PCT Article 33(2) as being anticipated by Long et al (5238329).

Long et al shows a joint between at least two parts clamped by a fastener (16, 21) having a shank in tension that holds the parts together, the improvement wherein the joint induces a bending stress in the fastener shank in a plane of bending when the fastener is assembled to the joint, the bending stress induced by the joint being substantially inversely proportional to a bending stress induced in the plane of bending by a maximum application load that the fastener shank is subjected to in service so as to reduce the maximum stress when the maximum application is applied, the bending stress induced by the joint is of a magnitude and direction to produce a substantially uniform stress distribution across the fastener shank in the plane of bending when the maximum application load is applied, the joint having a seat that the fastener bears against to induce tension in the shank and the seat is skewed (figures 9, 13) at an angle other than 90 degrees to an axis of a fastener hole in the parts through which the shank extends in a direction so as to induce bending stresses in the shank of the fastener opposite in direction to bending stresses induced by the maximum application load, the joint having joint faces that face one another and are held together by the fastener, a portion of the joint faces defining between them an unsupported gap that induces bending stresses in the shank of the fastener opposite in direction to bending stresses induced by the maximum application load, a hole that extends in the parts and receives the fastener shank having a first portion in one of the parts and a second portion in the other part, the first portion being skewed relative to the second portion (figures 9, 13) so as to induce bending stresses in the fastener opposite direction to bending stresses induced by the maximum application load, the second portion being threaded, the first portion being adjacent to a fastener seat that is substantially perpendicular to an axis of the first portion, the joint being a joint in a connecting rod connecting a bearing cap to a rod portion of the connecting rod.